Kennedy Space Center Range Safety Representative

The Kennedy Space Center Range Safety Representative is tasked with implementing NASA policy and keeping NASA's Range Safety Manager informed of all activities related to range safety. Over the course of the past year, the Kennedy Space Center Range Safety Representative supported a multitude of range safety activities, ranging from pre-launch policy interpretation and guidance to provision of on-console support during launch campaigns.

Constellation Program

The Kennedy Space Center Range Safety Representative participated in multiple meetings and technical exchange sessions in support of developing a draft set of tailored range safety requirements for the ARES 1-X test flight mission.

The mission has to meet both AFSPCMAN 91-710; *Range Safety User Requirements*, and NPR 8715.5; *Range Safety Program* requirements. The 45th Space Wing Safety Office, the Constellation Program Office, and NASA Range Safety worked through the Launch Constellation Range Safety Panel to successfully develop a single tailored document that includes all range safety requirements. The teaming process hopefully sets the groundwork for future Constellation Program range safety requirements document tailoring. The effort also exemplified NASA's philosophy of accepting or sharing responsibility for all aspects of range safety.

The Kennedy Space Center Range Safety Representative led an effort to prepare a requirements document that will be used to develop a Constellation Program Range Safety Risk Analysis Tool Kit. In 2007, a team consisting of NASA Range Safety, 45th Space Wing Safety Office, and risk model development support contractors completed a requirements document that will pave the way for future risk model development. The document includes preferred modeling capabilities, but also focuses on verification and validation and configuration management requirements. Although the ascent debris hazard assessment capability will be developed first, other hazards such as descent debris, distant focusing overpressure, and toxics risk are also being considered. Actual model development will begin early next year.

The Range Safety Representative also provided continued support to the Launch Constellation Range Safety Panel.

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Space Shuttle Program

For the Space Shuttle program, the Kennedy Space Center Range Safety Representative was involved in the development of an update to the Launch Commit Criteria Document which will implement NPR 8715.5 requirements. Following discussions with the Launch Commit Criteria Working Group, a decision was made late in the year to develop a separate section that contains all Shuttle-specific NASA range safety launch commit criteria. Work will continue in 2008.

Launch and entry risk estimates were evaluated for STS-117, STS-118 and STS-120, with mitigation efforts initiated through the Kennedy Space Center Emergency Operations Center when appropriate.

Mitigation efforts were required to minimize the distant focusing overpressure risk for all three missions while STS 120 also required mitigation efforts to reduce debris risk. Efforts included moving personnel from windows to mitigate distant focusing overpressure risk and moving people outside of facilities to mitigate risk from debris.

The Range Safety Representative also provided continued support to the Shuttle Range Safety Panel and supported STS-117, STS-118, and STS-120 launches on console in the Morrell Operations Control Center.

Launch Services Program

For the launch services program, the Range Safety Representative supported a number of NASA expendable launch vehicle campaigns, including Dawn, Phoenix, AIM, and THEMIS. This effort involved attending all the NASA and Air Force Safety readiness reviews and ensuring NASA procedural requirements were being met during the respective launch countdowns. An artist's concept of the five THEMIS satellites being released from their carrier is shown at right.

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Agency Activities

For Agency activities, the Kennedy Space Center Range Safety Representative served as a NASA point of contact to the Range Safety Group and supported several committees charged with developing or rewriting nationwide standards on a number of important range safety issues. These topics included developing reusable launch vehicle and unmanned aerial vehicle requirements and a rewrite of RCC 321, *Common Risk Criteria for National Test Ranges* for risk evaluation and approval.

Other Range Safety Activities

Other Range Safety activities that the KSC Range Safety Representative was involved in included the following:

- Documenting approval of range safety non-conformances/variances for all applicable NASA launches
- Supporting discussions regarding flight termination system frequency migration plans and how they affect future NASA missions
- Supporting discussions relative to meeting secure systems requirements found in NPR 2810, *Security of Information Technology*
- Assisting the Agency Range Safety Manager in developing a *Range Safety Operations* course for NASA, the last in a series of NASA Safety Training Center taught courses
- Developing, tracking, and implementing corrective actions from items identified during the Kennedy Space Center Infrastructure, Facilities, and Operations Audit performed by NASA Headquarters
- Providing toxic and distant focus overpressure risk analysis support to Wallops Flight Facility for the TAC SAT-2 Minotaur launch

The past year was a challenge in supporting a number of launch and entry campaigns, providing critical early support to the Constellation Program, and continuing to ensure Kennedy Space Center safely implements NASA Range Safety requirements. The coming year promises to be at least as busy and the Kennedy Space Center Range Safety Representative will continue to provide critical support whenever called upon by NASA programs or to address issues that may arise.